
NAVFAC IGS-09651 (MAY 2002)

Preparing Activity: LANTNAVFACENGCOM Based on UFGS-09651N

ITALIAN GUIDE SPECIFICATIONS

Use for ITALIAN projects only

SECTION 09651

RESILIENT TILE FLOORING

05/02

NOTE: This guide specification is issued by the
Atlantic Division, Naval Facilities Engineering
Command for regional use in Italy.

NOTE: This guide specification is issued by the
Atlantic Division, Naval Facilities Engineering
Command, as approved by the Naval Facilities
Engineering Command (Code 15G), for regional use in
EFA Mediterranean Area.

NOTE: This guide specification covers requirements
for resilient tile flooring materials. Sheet vinyl
for light duty is specified in Section 09655,
"Resilient Sheet Flooring". Sheet vinyl for
commercial and institutional use is specified in
Section 09656, "Resilient Sheet Flooring
(Institutional)". Flooring such as fire-retardant
tile, nonslip tile, and cork tile are not included
in this specification; appropriate wording must be
added when these are required.

NOTE: On the drawings, show:

1. Type, location and layout pattern of floor tile.
2. Type and location of base, stair treads, edge strips, and joints between resilient and other types of flooring.
3. Manufacturer's name and color number, along with

note: "Colors listed are for color identification purposes only. Listing is not intended to limit selection of similar colors from other manufacturers."

NOTE: Comments and suggestion on this specification are welcome and should be directed to the technical proponent of the specification. A listing of the technical proponents, including their organization designation and telephone number, is on the Internet.

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ITALIAN NATIONAL INSTITUTE FOR THE UNIFICATION OF STANDARDS (UNI)

UNI 8272/6	(1981) Tests on Rubber Floor Coverings - Determination of Adhesion to Support
UNI 8272/8	(1982) Tests on Rubber Floor Coverings - Determination of Color Stability
UNI 8272/9	(1982) Tests on Rubber Floor Coverings -Determination of Electrical Resistance
UNI 8273/8	(1981) Building - Rubber Floor Coverings - Requirements

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 1431-1	(1989) Rubber, Vulcanized or Thermoplastic - Resistance to Ozone Cracking - Part 1: Static Strain Test
ISO 1431-2	(1994) Rubber, Vulcanized or Thermoplastic - Resistance to Ozone Cracking - Part 2: Dynamic Strain Test

EUROPEAN COMMITTEE FOR STANDARDIZATION (CEN)

EN 649	(1996) Resilient Floor Coverings - Homogeneous and Heterogeneous Polyvinyl Chloride Floor Coverings - Specification
EN 685	(1996) Resilient Floor Coverings - Classification
EN 1817	(1998) Resilient Floor Coverings - Specifications for Homogeneous and Heterogeneous Smooth Rubber Floor Coverings
EN 12199	(1998) Resilient Floor Coverings - Specifications for Homogeneous and Heterogeneous Relief Rubber Floor Coverings

ITALIAN LAWS AND NORMS

D.M. n. 266 - 26/06	(1984) Decreto Ministervale 26 Giugno
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1.2 SUBMITTALS

NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item is required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Recommended codes for Army projects are "RE" for Resident Engineer approval, "ED" for Engineering approval, and "AE" for Architect-Engineer approval. Codes following the "G" typically are not used for Navy projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

Submit the following in accordance with section entitled "Submittal

Procedures."

SD-02 Shop Drawings

NOTE: Require shop drawings only if special laying
techniques or patterns are indicated. State
precisely what to show on shop drawings.

Flooring

Show [_____].

SD-03 Product Data

Vinyl-composition tile

Vinyl tile

Rubber tile

Wall base

Conductive flooring

Stair treads

Adhesives

Underlayment

Submit complete descriptive literature for rubber and vinyl tiles. Clearly mark the data to indicate which type, color, size and item the Contractor intends to provide. Provide sufficient data to show conformance to specified requirements. Upon completion: Submit in manufacturer's printed recommendations for maintenance methods and products for the flooring material. Include recommended cleaning solutions and procedures for maintenance.

[SD-04 Samples

Floor materials; G

Wall base; G

Edging strips; G

[Stair treads]; G

Where colors and patterns are not indicated, submit [_____] sets of manufacturer's standard colors and patterns for selection.]

SD-10 Operation and Maintenance Data

Floor materials, Data Package 1; G

Submit data package in accordance with Section 01781, "Operation and Maintenance Data."

1.3 DELIVERY AND STORAGE

Deliver materials to job in manufacturer's original, unopened containers with brands, names, and production runs clearly marked thereon. Handle carefully and store in original containers at no less than 18 degrees C for at least 48 hours prior to starting work. Do not open containers until they are inspected and accepted by Contracting Officer.

1.4 ENVIRONMENTAL CONDITIONS

Maintain temperature of spaces in which flooring work is to be performed at no less than 18 degrees C at floor level for 48 hours prior to starting work, during time work is performed, and for 48 hours after work is complete. Maintain minimum temperature of 13 degrees C, thereafter. Provide adequate ventilation to remove moisture and fumes from area.

1.5 EXTRA STOCK

NOTE: Generally, one carton of tile for each 150 to 200 square meters of tile suffices. Do not specify extra stock unless specifically requested by the facility. Warehousing for such materials may not be available.

After completion of work, deliver additional materials to Government for use in repairs and maintenance. Additional materials of each color shall be from same production run as installed materials. Furnish tile and base in original boxes, properly marked, in the following quantities and with colors in same proportions as installed materials:

- a. Vinyl-composition tile [____] pieces
- b. Vinyl tile [____] pieces
- c. Rubber tile [____] pieces
- d. Wall base [____] lineal millimeters
- e. Premolded inside base corners [____] pieces
- f. Premolded outside base corners [____] pieces
- [g. 5 percent of the material installed]

PART 2 PRODUCTS

2.1 FLOOR MATERIALS

NOTE: Use EN 685, Class 33 for heavy commercial use (schools, corridors), Class 34 for very heavy traffic (airports), and Class 42 for light industrial facilities where general use and vehicular traffic is anticipated. If multiple classes are used in one facility, indicate where the different wear classes are required.

NOTE: Appropriate material should be determined by:

Amount and type of traffic
Abrasiveness of local soil conditions
Exposure to water, chemicals, grease, and burns
Exposure to in-use damage (cuts, tears, gouges)
Exposure to direct sunlight (fading potential)
Anticipated type of and frequency of maintenance
Cost of maintenance
Appearance expectations

For rubber or vinyl tile on floors with radiant heating, specify special adhesive.

If tile is to be installed over existing resilient flooring, specify self-adhering tiles and refer to manufacturer's directions for surface preparation and installation.

EN 685 Class [33] [or] [34] [and] [42] [____], except as specified otherwise.

2.1.1 Color and Pattern

NOTE: Since some colors and patterns may not be available in all sizes and thicknesses listed, check manufacturer's published data to ensure that colors and patterns selected are available in size and thickness selected. Production runs of rubber tile are made in smaller quantities than other resilient tiles, so some variation in shade is to be expected.

Color shall be in accordance with UNI 8272/8. Color and distinct pattern shall be uniformly distributed throughout thickness of tile. Materials of same type, pattern, and color shall be of same production run and so marked. Variations in shades and off-pattern matches between containers are not acceptable. Flooring in continuous area or replacement of damaged flooring in continuous area shall be from same production run with same

shade and pattern.

[2.1.2 Flammability

**NOTE: Delete, except for projects using resilient
flooring in corridors and exitways.**

Resilient tile flooring shall be in accordance with D.M. n. 266 - 26/06.

]2.1.3 Vinyl-Composition Tile

Vinyl-composition tile in accordance with EN 649 and UNI 8272/8 with [solid color] [and] [through pattern], smooth surface, 300 by 300 mm by [610 x 610 mm] by 3.175 mm thick.

[2.1.4 Vinyl Tile

Solid vinyl tile in accordance with EN 649, homogeneous mottled color throughout, first quality material. Tile shall be not less than 2.5 mm thick and 300 x 300 mm [610 x 610 mm] wide. The tile shall be free from defects affecting the serviceability or appearance. Tile shall be dense enough to preclude the possibility of creeping, stretching or shrinking under traffic. Coloring matter and pigments shall be insoluble in water and non-bleeding. Tiles shall match the colors and patterns indicated. Pattern and color shall be same for flooring in any one continuous area.

]2.1.4.1 Product Manufacturers

The following manufacturers make products which comply with these specifications:

- a. Liuni S.p.A.
Via G. Stephenson, 43
20157 Milano
Tel. 02/30731
Fax 02/3088196
Tel. Roma 06/39376230
- b. FORBO ITALIA S.r.l.
Milano S. Felice, 23
20010 Segrate (MI)
Tel. 02/7531488
Fax 02/7532340
- c. FORMAR
Via Achille Grandi, 26/26A
15033 Casale Monferrato (AL)
Tel. 0142/455075
Fax 0142/74834

2.1.5 Rubber Tile

NOTE: EN 1817 (smooth surface), Class 33 and 34
(commercial) requires a minimum thickness of 2.0 mm.
EN 12199 (relief surface), Class 33 and 34
(commercial) requires a minimum thickness of 3.5 mm.

Rubber floor tile shall be in accordance with EN 1817 (smooth) or EN 12199 (relief surface), ISO 1431-1 and ISO 1431-2. Rubber floor coverings shall be in accordance with UNI 8273/8, [homogeneous [solid color] [through mottled] uniform color throughout] [or laminated [solid color wear layer] [mottled wear layer]]. Tile shall be not less than [2.0 mm] [2.5 mm] [3.5 mm] [4.0 mm] thick and a minimum of [610 x 610 mm] [____] wide. Tile shall be free from defects affecting the serviceability or appearance. Tile shall be dense enough to preclude the possibility of creeping, stretching or shrinking under traffic. Coloring matter and pigments shall be insoluble in water and non-bleeding, and resistant to alkali, cleaning agents, and light. Tile shall be selected from samples provided to the Contracting Officer and shall match the colors indicated in the Finish Schedule. Pattern and color shall be the same for flooring per each continuous area: [homogeneous [a. solid color] [b. through mottled]] [or laminated [a. solid color wear layer] [b. mottled wear layer]].

2.1.5.1 Product Manufacturers

The following manufacturers make products which comply with these specifications:

- a. Mondo S.p.A.
Via Garibaldi, 192
12060 Gallo D'Alba (CN)
Tel. 0173/262024
Fax 0173/262563
- b. Artigo S.p.A.
Strada provinciale Binasco-Melegnano
27010 Siziano (PV) Italia
Tel. 0382/610200
Fax 0382/610210
- c. FORMAR
Via Achille Grandi, 26
15033 Casale Monferrato (AL)
Tel. 0142/455075
Fax 0142/74834

2.1.6 Conductive Flooring

[Vinyl tile] [Rubber tile] as specified above, [2.5 mm] [3.0 mm] [3.5 mm] [4.0 mm] thick, 300 by 300 mm [610 x 610 mm]. Conductive flooring shall conform to UNI 8272/9; and, either EN 649 or EN 1817.

2.1.7 Wall Base

[Rubber] [or vinyl]; [straight, adjacent to carpet] [cove, adjacent to resilient flooring]. Base shall be [63.5] [101.6] [152.4] mm high, [2.03] [3.175] mm thick, [in] [black] [brown] [plain color] [marbleized] [RAL_____]. Use flexible base to conform to irregularities in walls, partitions, and floors. Provide premolded corners in matching size, shape, and color for all right-angle inside and outside corners. [Provide 3.175 mm thick premolded corners in matching size, shape, and color for all right angle inside and outside corners with a 3.175 mm thick base.]

2.1.7.1 Product Manufacturers

The following manufacturers make products which comply with these specifications:

- a. Mondo Rubber S.p.A.
Via Garibaldi, 192-12060
Gallo D'Alba (CN), Italia
Tel. 0173/62024 (3 linee)
Fax 210252 Mondo I
- b. Artigo S.p.A.
Strada provinciale Binasco-Melegnano
27010 Siziano (PV), Italia
Tel. 0382/610200
Fax 0382/610210

2.1.8 Stair Treads

Rubber, [square] [round] nose profile, [diagonal grid] [disc surface] [ribbed] [safety stripped], 6 mm nominal thickness in front 100 mm of wear area; balance to be 3 mm nominal thickness; nose 5 mm nominal thickness. Provide 3 mm thick skirting and 152.4 mm cove base for risers. Treads to have 80 percent of back and nose sanded by manufacturer to assure good adhesion. Provide manufacturer's epoxy nose filler to completely fill gap between stair and tread nose for all treads.

2.1.9 Lining Felt

Asphalt felt, as recommended by flooring manufacturer.

2.1.10 Underlayment

**NOTE: Particleboard is not recommended for use as
an underlayment.**

Latex type, as recommended by flooring manufacturer. Wood and hardboard underlayment are specified in Section [06100, "Rough Carpentry"].

2.1.11 Adhesives

2.1.11.1 Adhesive for Vinyl-Composition Tile

Cutback adhesive for installation of tile over concrete above, on or above grade. Moisture and alkali resistant. Non-asbestos formulated or a latex adhesive recommended by flooring manufacturer.

2.1.11.2 Adhesive for Wall Base

Emulsified acrylic latex; non-flammable.

2.1.11.3 Other Adhesives

Rubber flooring adhesion to support shall be in accordance with UNI 8272/6. As recommended by floor material manufacturer.

2.1.11.4 Primers

For concrete floor, preparation shall be suitable for the application of adhesive and shall be as recommended by the rubber and vinyl tile manufacturer.

2.1.11.5 Crack Filler for Concrete Floor Surfaces

As recommended by floor covering manufacturer.

2.1.11.6 Mastic Underlay for Concrete Floor Surfaces

Base of latex or polyvinyl acetate resin, as recommended and approved by the flooring manufacturer.

2.1.11.7 Cleaner and Polish

As recommended by the flooring manufacturer in the printed maintenance instructions.

2.1.12 Finish

Flooring manufacturer's standard high-solids finish for shine without buffing; non-flammable; compatible with factory-applied finish. May be buffed or burnished for maximum gloss.

2.1.13 Edging Strips

[Brass, aluminum, or other light-colored nonferrous metal] [Beveled vinyl plastic] [Beveled rubber].

PART 3 EXECUTION

3.1 CONDITION OF SURFACES

NOTE: Removal of curing compounds is not required
before applying resilient flooring. Remove other
curing compounds.

Surfaces that are to receive flooring shall be clean, dry, smooth, firm, sound and free of oil, paint, wax, dirt, or other damaging materials.

3.1.1 Preparation of Surfaces

3.1.1.1 Concrete Floor Surfaces

NOTE: In Division 3, prohibit use of curing compounds, and coordinate installation of hardeners, sealers, or other substances that might interfere with bonding of adhesive.

Grind ridges and other uneven surfaces smooth. Remove concrete curing compounds, other than types that do not adversely affect adhesive. Cut out and fill all cracks 2 mm wide and wider with crack filler. Provide latex underlayment to fill remaining holes, cracks, and depressions and for smoothing, leveling, and feather-edging concrete. Remove loose particles; vacuum chalky, dusty surfaces; prime cleaned surfaces, if recommended by flooring manufacturer.

3.1.2 Moisture Test for Concrete Floors

As recommended by floor covering manufacturer.

3.2 APPLICATION

To avoid damage, install flooring after other tradesmen in same area have completed their work. Apply flooring and accessories in accordance with manufacturer's directions, using workmen experienced in application of such flooring. Detailed requirements:

- a. Adhesives: Apply in accordance with adhesive manufacturer's printed directions. Do not allow smoking, open flames or other sources of ignition in area where solvent-containing adhesives are being used or spread. Post conspicuous signs reading "NO SMOKING OR OPEN FLAME" in area of the spread adhesive.
- b. Flooring: Apply in patterns indicated. Start in center of room or area, and work toward edges. Keep tile lines and joints square, symmetrical, tight, and even. Keep each floor in true, level plane, except where slope is indicated. Vary width of edge tiles as necessary to maintain full-size tiles in field, but no edge tile shall be less than one-half full size, except where irregular-shape makes it impossible.
- c. Cutting: Cut to fit around permanent fixtures, built-in furniture, pipes, and outlets. Cut flooring edges and scribe to walls and partitions after field flooring has been applied.

NOTE: Indicate edging and thresholds on the drawings; specify thresholds in Section 08710, "Door

Hardware."

- d. Edge Strips: Provide edging strips where flooring terminates at points higher than contiguous finished flooring, except where thresholds are provided. [Anchor metal strips to concrete floor surfaces by countersunk screws into metal or fiber expansion sleeves.] [Secure plastic strips with adhesive.]

3.2.1 Application of Vinyl-Composition Tile

Apply only recommended adhesives to [suspended concrete,] [underlayment,] [and] [felt-covered wood floor] surfaces.

3.2.2 Application of [Vinyl] [Rubber] Tile

Lay tile in the adhesive in indicated pattern. Immediately after installation, roll floors with three-section roller weighing not less than 45 kilograms; then sandbag high points and raised edges until danger of loosening has passed.

3.2.3 Application of Wall Base

NOTE: When wall base is to be applied to wallboard, specify in the gypsum wallboard section that wallboard shall extend to and be finished square with floor.

Apply wall base after flooring is complete and wall surface is dry. [Where wall base is used in conjunction with vinyl wall covering, cut vinyl wall covering off 6 mm below top of base, and spread adhesive to back of base, as specified herein.] Form inside and outside corners with base materials, as specified herein.

3.2.3.1 Surface Preparation

Fill cracks and voids in wall with crack filler. Bring irregular surfaces to smooth finish with smoothing compound.

3.2.3.2 Wall Base

NOTE: When wall base is to be applied to wallboard, specify in the gypsum wallboard section that wallboard shall extend to and be finished square with floor.

Apply adhesive to back of base with notched trowel, leaving approximately 6 mm bare space along top edge of base. Immediately press base firmly against wall, and move into place, making sure that toe is in contact with floor surface and wall. Roll entire vertical surface of base with hand

roller, and press toe of base with a straight piece of wood to ensure proper alignment.

3.2.4 Application of Stair Treads

Fit treads carefully, and securely bond with adhesive, in accordance with manufacturer's directions. Nose of rubber treads to fit tightly against face of stair riser or nosing with open spaces between stair and rubber tread completely filled with epoxy. Roll all treads and risers until firm bond has been established.

[3.2.5 Application of Conductive Flooring

Apply in accordance with manufacturer's printed directions.

]3.3 CLEANING AND FINISHING

3.3.1 Cleaning

Follow flooring manufacturer's recommendations to remove surplus adhesive, and clean flooring and adjacent surfaces. [Five][Ten] days after installing, wash flooring[, except conductive flooring,] with flooring manufacturer's recommended cleaning solution; rinse thoroughly with cool, clean water. Avoid flooding of floor. [Clean conductive flooring thoroughly with a disinfecting detergent-type of solution recommended by conductive tile manufacturer. Comply with solution manufacturer's directions to meet conductivity requirements of UNI 8272/9. Conductive flooring shall receive no further treatment or finish which could leave grease, wax, dust, film, soap scum, or other insulating substances on floor.]

3.3.2 Finishing

NOTE: Select applicable paragraph(s) from the following:

NOTE: Some activities prefer no-wax maintenance; others prefer waxing. Prewaxed flooring and flooring that does not require wax do not need to be washed and waxed after installation if they are properly protected. Modify paragraph accordingly.

[Give flooring[, except conductive or rubber flooring,] two coats of wax, each coat buffed to even luster with electric polish. Clean bases and stair treads, but do not polish them.]

NOTE: Use this paragraph in lieu of the preceding where longer lasting finish with exceptional resistance to scuffing, scratching, and marking is

desired.

[Give flooring[, except conductive or rubber flooring,] three coats of metal cross-linked acrylic-copolymer sealer finish. Application method and coverage rate of each coat shall be in strict accordance with manufacturer's printed instructions. Do not buff.]

NOTE: Use this paragraph for those flooring products which have a no-wax maintenance finish and for rubber tiles and stair treads.

[Clean floor by damp mopping. Do not buff.]

[3.4 FIELD CONDUCTIVITY TESTS

NOTE: Delete this paragraph if conductive flooring is not used in project.

After cleaning but prior to acceptance, [test conductive flooring for conductivity in accordance with UNI 8272/9, in presence of Contracting Officer or his authorized representative] [conductive flooring will be tested by a representative of the Contracting Officer]. Complete installation shall meet conductivity requirements of UNI 8272/9.

]3.5 PROTECTION

Protect flooring [and stair treads] from traffic for 48 hours after installation to allow set of adhesive. From time of laying until acceptance, protect floor [and stair treads] from damage. Remove and replace defects which develop, such as damaged, loose, broken, or curled tiles [prior to final inspection].

-- End of Section --